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Development, implementation, and evaluation of *Altered States of Consciousness*: An immersive art exhibition designed to increase public awareness of psychotic experiences

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Abstract

Background: The arts can increase public awareness of mental health. Stigma about psychosis remains high despite common occurrences of psychotic experiences in the general population (e.g. hearing voices, seeing visions, and unusual sensory experiences). Targeted approaches may therefore benefit stigma-reduction. This project aimed to produce an immersive art installation that increased public understanding of psychotic experiences. **Methods:** Development stages included workshops with people with lived experience, training actors to perform ‘voices’, sourcing artworks, and producing a voice hearing simulation and video installation. **Results:** The exhibition was implemented as intended, gained positive visitor feedback (N=150), felt immersive, enhanced subjective understanding of voice hearing, increased compassion, and was not unduly stressful. A production team meeting (N=10) identified exhibition strengths, challenges, and potential modifications. **Conclusions:** This successful, large-scale pilot of an immersive art exhibition combined creative, academic and experiential perspectives. It enabled visitors to ‘hear voices’ and increased their understanding of psychotic experiences.

Keywords: auditory hallucination; art exhibition; mental health; psychotic experiences; simulation

Background

Approximately 1 in 20 adults in the general population report psychotic experiences, such as hearing voices, seeing visions, or other unusual sensory experiences (McGrath et al., 2015). Such experiences are even more common in children (Fisher et al., 2013). Despite the frequent occurrence of such experiences, the stigma associated with psychosis remains high (Yang et al., 2013), often resulting in help-seeking delays for affected individuals (Gronholm, Thornicroft, Laurens, & Evans-Lacko, 2017), and subsequently to poorer outcomes (Marshall et al., 2005). Public health campaigns aim to reduce mental health stigma. The UK *Time to Change* campaign increased positive attitudes towards people with mental health problems (Evans-Lacko, Corker, Williams, Henderson, & Thornicroft, 2014). However, they did not evaluate diagnosis-specific stigma. As psychosis-related stigma tends to exceed other disorders (Yang et al., 2013), targeted approaches may benefit stigma-reduction.

The arts are an effective way to increase public awareness about mental health. Studies show that museums and art galleries can be useful sites for public health interventions and health promotion programmes (Camic & Chatterjee, 2013). Such applications are becoming increasingly widespread and global, from an art roadshow designed to promote positive images of mental health in rural Tasmania (Harris, Barnett, & Bridgman, 2016) to applied theatre that draws on real-life stories from its audience to reflect the psychosocial needs of people in Sri Lanka (McCormack & Henry, 2016). In particular, art exhibitions are a valuable opportunity to challenge stigma about mental health. A London art exhibition was found to have challenged negative attitudes towards mental health and provided a forum for reflection (Tischler, 2017). More specifically, an installation at the Wellcome Collection¹ invited visitors to consider voice

¹ <http://wellcomecollection.org/exhibitions/voice-hearing-project>

hearing experiences, although it did not directly engage visitors with perceptual aspects of psychotic experiences, a factor shown to increase empathy (Ando, Clement, Barley, & Thornicroft, 2011); an important stigma-related outcome.

This project aimed to develop an immersive art installation to increase public awareness of what it feels like to have psychotic experiences, and thereby improve empathy towards those with such experiences. This paper outlines the development, implementation, and evaluation of the resulting exhibition.

Methods

Objectives

Our research objectives were to provoke debate about whether psychotic experiences, which are often viewed as being 'abnormal', are part of 'normal' human experience; to show that psychotic experiences occur on a continuum from low-level phenomena through to all-consuming experiences that impair functioning; to synthesise academic and experiential knowledge through co-production; and ultimately to reduce psychosis-related stigma.

Procedure

Conception. The exhibition developed from an art-science brokerage event organised by the Arts, Health & Wellbeing Programme, King's College London, which led to the *Is it 'normal' to be psychotic?* project, a collaboration between HLF from King's College London's Social, Genetic & Developmental Psychiatry Centre and artist RM, brokered and supported by the Cultural Institute, King's College London. HLF drew on her academic expertise in psychosis,

particularly assessing and interviewing young people in clinical settings and from the general population, and RM brought creative expertise in light and sound technologies. The various components involved in developing the exhibition are detailed below.

Consultation with people with lived experience. The Voice Collective, part of Mind in Camden, is a London-wide project that supports children and young people who hear voices, see visions or have other unusual sensory experiences. Young people were recruited via the Voice Collective website to work on exhibition development with the project team. Five Voice Collective workshops were held over a 3-month period. They were facilitated by RW and EM and attended by RM, HLF, JB, PD, and three young people from the Voice Collective. Workshops discussed first-hand experiences of a wide range of unusual sensory experiences, experienced by the young people, facilitators and JB, both directly and using a range of creative mediums; developed creative ideas about authentic ‘voice’ simulation, including sound production and spatial location; and emphasised situating the installation in familiar, non-clinical settings, e.g. art gallery or London Underground.

Ten ‘voice characterisations’ were developed based on the lived experience of group members. Characterisation represented different styles of voice, e.g. positive, negative, or neutral. The group selected seven voice characterisations to use in the exhibition. The group labelled these voices ‘controlling protective’, ‘controlling needy’, ‘playful’, ‘reassuring’, ‘narration - what the individual is doing’, ‘narrative - what is going on around the individual’, and ‘withering’. The other three ‘voices’ were deemed too complex to simulate. These were labelled ‘quiet/unnerving’, ‘attempting to confuse or disrupt’, and ‘incoherent babble’.

Voice performance. An advert was placed on Casting Call Pro, a website used to recruit professional actors, requesting actors to participate in an immersive audio-visual art installation designed to increase awareness of psychotic experiences and to perform the role of individual characters that exhibition visitors would experience as a voice. The vacancy advertised up to eight positions and requested actors with a vocal playing age of 25-60, both males and females, and with a personal interest in mental health. Fifteen applications were received in one week. Ten actors were interviewed by phone; seven were selected, all of whom reported experience of mental health-related difficulties, either lived experience or via a close connection to a friend or family member. Actors were selected on the basis of vocal ability and confidence delivering scripted and improvised lines to a microphone in both studio and live environments.

Actors attended a one-day character development workshop, facilitated by PD, including a Voice Collective Q&A; a half-day audio recording studio session; and a one-day gallery rehearsal. PD coached actors to develop voice characterisations which portrayed the range of voice hearing experiences developed by the Voice Collective, and directed actors during rehearsals and performances. Audio recordings from actor rehearsals were reviewed by Voice Collective members and feedback led to further revisions. Actors created a spectrum of interpretations of each characterisation, which were used to generate a loose script and cast actors in specific roles. Physical and vocal performance exercises were used to foster collaborative working and hone characterisations for live performance. Typical exercises included: (i) Actors responded to a series of words which encapsulated characterisations developed in Voice Collective workshops. Actors were asked to physically embody an emotion, then to vocalise words or sentences they associated with that emotion. This continued until the actors were moving and speaking in the space as that emotion-character. Actors were then

restricted from using movement and asked to articulate that character solely with their voice. (ii) Actors experimented with intensity levels, performing character at different levels ranging from one (smallest, subtlest depiction) to ten (largest, most overblown depiction). This became a reference point throughout the recording session and performances, where actors were instructed to play characters at a certain intensity level. This exercise ensured subtle, natural performances and guarded against actors overtly ‘acting’ characters. (iii) Actors shadowed one another in an imaginary art gallery space. In pairs, one actor responded to imagined exhibits as they would in real life, while their partner followed them and responded to the exhibits from the point of view of the character, directing their performance towards their partner. This provided actors with opportunities to perform characters to other people as a voice only they could hear, and to experience ‘hearing voices’. (iv) Walking exercises ‘mapped’ the gallery, ensuring actors were aware of physical and sensory features of the space. This task enabled actors to gain experiential understanding from audience perspectives.

Voice simulation apparatus. To create a voice simulation, exhibition visitors were issued an iPod audio guide and headphones. The gallery had a concealed production area with two vocal booths, which each had CCTV camera feeds of all gallery rooms. Working with an operator in each booth, actors could direct voice performances into visitors’ audio guide headphones. Individual visitors could be identified by a uniquely coloured headband on their headphones and matching lanyard, and their physical description was covertly logged on their arrival. Audio technology was pilot tested by the production team, including members with lived experience of voice hearing. Technical difficulties were identified and revisions were made.

An audio guide script was written, and recorded by a professional voiceover artist, including information on artworks, artists, and mental health. This audio was edited with gaps to form a 25 minute audio track which could be manually triggered at the start of the exhibition. Actors' microphone audio was mixed through Ableton Live with the audio guide recording. An operator in each booth used a MIDI pad to control which microphone was being sent to which headphones. Consequently, visitors could hear a unique improvised voice performance over the generic audio guide. A combination of TeamSpeak and JackRouter was used to direct the audio out of Ableton Live via a Wi-Fi network to the ten iPods. Open back headphones meant visitors did not feel sonically isolated, and actor and visitor voices could be individuated. Technicians operated audio equipment in the vocal booths, fading actors in and out, allowing them to speak to visitors. PD offered additional direction, including lines and ideas for improvisation; assisted actors with tracking their designated visitors on gallery CCTV; and ensured actors pursued their objective of making an emotional connection with visitors.

Audio recordings of actors improvising lines were mixed with the voiceover to create pre-recorded versions of the experience, functioning as a back-up experience if insufficient actors were available.

Setting and artworks. The exhibition took place in an art gallery. This was selected by workshop participants because it is an everyday setting, which highlights that hearing voices often occurs in non-clinical, public spaces. It also served as a useful creative device because gallery visitors commonly wear headphones and listen to audio tours.

Exhibition artworks were selected for their relevance to mental health and through affiliation to art organisations wishing to raise mental health awareness. The Debut

Contemporary Gallery loaned artist Toby Brown's self-portrait triptych, and his portraits of JB, and musicians Amy Winehouse, Sandi Thom, Carrie Grant, and Danny McNamara. Toby Brown describes his lived experience of psychosis as enabling him to capture inward struggles through painting. Mental health charity *SANE* loaned a Black Dog statue. The black dog is a metaphor for depression and the statue aimed to symbolise the power and unpredictability of mental illness. Artist Felicity Jones loaned her metal heart sculpture *HEARTSMELT*. Felicity Jones draws on experiences of anxiety and depression and finds the creative process a way to focus on positives. The Heart demonstrates the connection between the mechanical and the organic, representing our collective heart and the fact that emotional states are linked to physical wellbeing.

Video installation. The final part of the exhibition aimed to demonstrate further altered states of consciousness in daily life. The London Underground was selected as a stressful, paranoia-inducing environment that is claustrophobic, over-stimulating yet familiar. RM filmed a point-of-view journey from escalators at St Paul's Underground Station to the eastbound platform multiple times. Three GoPro cameras were used (facing forward, left, and right) to capture a 180 degree view. The audio was recorded binaurally using a microphone in each ear of the operator to produce an accurate representation of the environment. Footage from each camera was combined as one large image. The video was edited with recorded sound and visual effects. Multiple versions of the journey were layered over each other to create a psychotic-like visual, making the viewer unsure what is real. The final version was approximately four minutes in duration and over 5000 pixels wide. A 'U-shaped' box of rear projection screens was suspended from gallery rafters, consisting of two 5m x 2m sides and a 2m x 2m end. The screen surrounded a 4.5m x 1.2m 'train platform' which was constructed 0.5m from the floor. Five projectors, two

on each side and one at the end, and Resolume Arena software, produced a seamless, immersive image for visitors standing on the platform. A Funktion One four point sound system was used for audio playback, which included sounds from trains and people. Audio had sufficient volume and bass to be felt physically.

Advertisement. Visitors responded to an advert describing an immersive art exhibition that would provide them with an opportunity to challenge their perceptions of mental health and normality, allowing them to appreciate what it feels like to hear voices, see visions, and have other unusual sensory experiences. Free tickets were advertised and circulated using the website Eventbrite. The event was advertised on King's College London webpages and production team members circulated the advert to friends and colleagues. Visitors purchased a free ticket for a designated timeslot in one of nineteen sessions, with a ten person limit per timeslot. Hashtag #AlteredStatesArt was used for social media.

Evaluation. Twitter analytics were used to measure social media impact. Exhibition visitors completed a questionnaire on their demographic characteristics, and completed pre-/post-exhibition measures of their mood and attitudes towards voice hearing and unusual experiences (see Riches et al., 2017, for full details of the quantitative evaluation). The current paper provides the findings from the qualitative aspects of the evaluation. Data collection was led by SR, HLF, and CT. After exiting the exhibition, visitors were invited to participate in discussion and debrief groups, led by trained psychologists SR or HLF. Each group consisted of approximately three to five visitors and lasted up to thirty minutes. Researchers wrote a narrative record of key points, themes and questions that arose in these discussions as part of a qualitative

evaluation immediately after the groups finished in order to maximise accuracy of recording. The group was not audio-recorded as this was not appropriate for the open, public art gallery setting, and it was felt by researchers that this would change the group dynamics. The data were coded into themes by SR and HLF. Consensus was reached through discussion and the themes were finalised following consultation with the wider team. The debrief group was also an opportunity to check that participants were not distressed by the experience and to discuss any difficulties. A clinical psychologist was present throughout if participants found the experience uncomfortable and wished to discuss this further. If participants found the experience distressing the plan was to follow the conventional research procedure of signposting participants to their General Practitioner (GP). However, this was not necessary for any participant. Two weeks after the exhibition, the production team met for a one-hour consultation meeting chaired by HLF. A topic guide for this meeting was developed by SR and HLF, targeting perspectives (preparation, voice performance, technology, visitor experience, organisation) and key questions (What went well (strengths)?, What went less well (challenges)?, What would you do differently, or in addition, if you did the exhibition again (potential modifications)?). The meeting was audio recorded; data was collated and analysed by SR using thematic analysis. The themes were discussed within the research team and consensus was reached by all co-authors, including experts by experience.

Participants

Participants in this study were, firstly, visitors to the exhibition, who were a convenience sample of invitees from King's College London, local artists, and respondents to advertisements in South-East London; and secondly, the production team, who were researchers, creative directors, actors, and consultants with lived experience of voice hearing.

Results

Exhibition

The resulting exhibition was titled *Altered States of Consciousness*. Tickets sold out in under a week. It ran for four days at the Copeland Gallery, South London, in January 2017. The Copeland Gallery is situated in an off-road complex of artist studios, bars, galleries, and event spaces. **Figure 1** depicts a gallery floor plan. Attendance was high; non-attenders were replaced where possible by local people from the complex expressing an interest. All components of the exhibition were implemented as intended. Visitors initially entered and were met by researchers in a waiting area (**Room A, Figure 1**). SR covertly wrote down physical descriptions of visitors, i.e. colours of clothes, shoes, hats, glasses, facial hair etc., and passed this to the production team. Visitors were individually allocated their unique audio guide, asked to wear headphones throughout the exhibition, and completed a pre-exhibition questionnaire. A briefing with HLF or SR informed visitors that the exhibition would provide them with a perception-altering experience. They were also told that if they felt uncomfortable or distressed at any point during the exhibition then they should remove their headset and return to the waiting area. There was a trained clinical psychologist available at all times to assist visitors if required. Visitors were then guided through a three-room art gallery in groups of up to ten people. One researcher acted as an usher so that visitors moved sequentially through gallery rooms as a group. The usher also observed the visitors throughout to check for any signs of distress and was ready to intervene to help if needed. No visitors were visibly distressed or chose to leave the exhibition early. The first room (**Room B, Figure 1**) included the Toby Brown portraits on all walls and the Black Dog sculpture in the centre of the floor (see **Figure 2**); the second room (**Room C, Figure 1**)

contained the brightly lit *HEARTSMELT* sculpture; and the final room (**Room D, Figure 1**) consisted of the London Underground video installation. Video installation playback was timed as the visitors started walking onto the train platform. This coincided with a descent down an escalator on the video, producing a realistic feeling of movement. Throughout all three rooms, the audio guide described the artworks, the involvement of voice hearers in development of the exhibition, and referenced historical figures that experienced mental health difficulties, while the audio guide was repeatedly overlaid by ‘voices’ performed by the actors. Eight of ten audio guides received live performances (iPods 1-8) and two received a pre-recorded voice (iPods 9-10). Actors remained concealed from visitors in their adjacent room (**Room E, Figure 1**). In general, four actors were on shift at a time, occupying the two vocal booths in pairs (the smaller subdivisions within **Room E, Figure 1**). Actors performed voices for two visitors each. SR, RM, and producer PR were in three-way radio contact throughout, enabling audio guides to be activated and actors to perform on cue. Following feedback, audio guide run-time was reduced to sixteen minutes. Once the video installation ended, visitors were guided back through the three rooms to the waiting area (**Room A, Figure 1**) for the post-exhibition discussion groups and to complete a post-exhibition questionnaire. Afterwards visitors were signposted to charities affiliated with the exhibition and provided with details of organisations to contact if they wanted further information or to discuss the issues raised, as well as advised to contact their GP if they required mental health assistance.

The exhibition was later featured on the BBC World Service Health Check programme² which was broadcast around the world. #AlteredStatesArt was mentioned 78 (relevant) times on Twitter with 123 likes of posts related to the exhibition. A website is under construction to

² <https://t.co/HyGHzVEAuQ>

showcase the exhibition and provide further information on psychotic experiences (www.alteredstates.io).

Post-exhibition discussion groups with visitors

Of the 190 visitors, 150 people completed pre-/post-exhibition measures, which showed significant increases in understanding what it feels like to hear voices and compassion towards voice hearers (see Riches et al., 2017, for full details). Almost all of these visitors participated in post-exhibition discussion groups. **Table 1** reports these visitors' demographic characteristics. **Table 2** outlines the main themes, subthemes, and associated questions that emerged from the discussion groups. The main themes were participants' subjective understanding of voice hearing; immersiveness of the simulation; cognitive, emotional, and behavioural responses; pre-exhibition expectations; responses to features of the exhibition or simulation; and potential applications of the simulation. Participants' subjective understanding focused predominantly on how the simulation increased empathy, normalised voice hearing, and raised questions about personal identity. Participants reported that they found the exhibition and simulation immersive, realistic, and effective, and that it gave them a better understanding of voice hearing. The main cognitive response was distraction, which prompted empathic questions about coping with voice hearing. Participants wrestled with whether to obey or defy voices, and identified many emotional responses, including frustration, irritation, anxiety, and disorientation; and noticed modifying their behaviour accordingly, e.g. by not talking to visitors to whom they otherwise might have spoken. The exhibition highlighted visitors' expectations: many expected voices to be distressing and a significant number expressed disappointment that simulated voices were not more distressing. Overall, participants enjoyed and felt they learned from the exhibition,

suggested alternative applications for the simulation, but wanted more voices and to experience different types of voices.

Production team consultation

The production team meeting (N=10) was attended by two researchers, two creative directors, four actors, and two consultants with lived experience of voice hearing. The meeting focused on strengths and challenges of the exhibition and potential modifications for future implementations. These are summarised in **Table 3**. The team recognised that the project had been largescale, well-researched, and the aim to simulate voice hearing was achieved, but identified insufficient preparatory time immediately before the exhibition and emphasised the benefit of further workshops, rehearsals, and piloting. Actors felt that rehearsals were useful but wished for greater involvement in Voice Collective workshops and the opportunity to be individually paired with voice hearers. Actors found that gallery-based rehearsals and partnered-working enhanced performance but felt hindered by time constraints. They found the performance deeply affecting and reflected on benefits of greater support to debrief and de-role. Voice hearing simulation technology was implemented as intended but the team agreed that more time was needed to source technology and rehearse implementation with live participants. The team felt there was effective communication between front of house, production, and actors, but highlighted various difficulties for actors in tracking visitors on small monitors, with suggested modifications focused on improved CCTV technology. The team were satisfied that the exhibition had obtained the desired emotional response from visitors and that visitors had found it immersive, but felt visitor expectations about intended distress might be better managed with further psychoeducational information on the diversity of genuine voice hearing

experiences. Post-exhibition discussion groups were well received but the thirty minute duration was deemed insufficient. The team were satisfied with tickets sales but agreed that the lack of ticket fee may have contributed to nonattendance by ticketholders. The team agreed that data collection was conducted effectively but felt computerised methods would be beneficial with larger numbers of visitors and that further longitudinal data would enhance the findings.

Discussion

This study describes the development, implementation, evaluation, and potential modifications for a largescale pilot of an immersive art exhibition that has been shown to increase public understanding of what it feels like to hear voices, see visions and have other unusual sensory experiences (Riches et al., 2017). In this study we have shown that the visitors found the exhibition immersive, provided positive feedback, and the exhibition achieved its aim by raising awareness about mental health and the experience of voice hearing through a co-produced exhibition. The audience found the voice hearing simulation acceptable and it raised important questions about mental health, identity, and ways of coping.

Strengths and limitations

Key strengths of the study include its novel concept, its combination of multiple perspectives, large sample size, and implementation within six months of conception. Such robust proof-of-concept enabled thorough evaluation and identification of potential modifications. Practical limitations included time and financial constraints, which meant less time than intended to trial with people with lived experience, and led to focusing predominantly on voice hearing at the expense of additional multi-sensory simulations, e.g. manipulation of shadows or reflection.

Design limitations include the convenience sampling, such that visitors may not be representative of the general public; lack of independent co-raters and audio-recording for part of the qualitative evaluation, which may have biased the findings; and lack of long-term follow-up, which means that we are unable to assess whether positive effects persisted and translated into cognitive or behavioural changes in other contexts.

Future applications

The exhibition could be re-designed on a larger scale, with a greater number of hi-tech multi-sensory simulations, and adapted for various settings, e.g. galleries, festivals, community events, and online. The visitor discussion themes and associated questions reported in this study could usefully supplement existing information for visitors, in particular understanding the diversity of voice hearing experiences and shifting emphasis towards education, rather than the identified propensity to view voices as ‘entertainment’. Discussion groups could also involve individuals with lived experience of voice hearing to a greater extent; such ‘social contact’ may enhance the stigma reduction associated with simulations (Ando et al., 2011).

Multi-sensory simulations could be realised through use of virtual reality (VR), which has been shown to lead to higher user engagement when integrated into the visual arts (Maleshkova, Purver, Weyrich, & McOwan, 2016). VR already shows promise as a psychosis treatment (Freeman, 2008); it may also be harnessed to create multi-sensory simulations that reduce stigma. Future research may investigate how to best improve visitor immersion in the simulation. Evidence suggests that immersive simulations can increase empathy, with VR

interventions developed for experiential understanding of dementia,³ humanitarian crises (Hunt et al., 2016), and environmental issues (Ahn et al., 2016).

The simulation also has potential training applications for mental health clinicians, by providing them with a subjective, experiential understanding of voice hearing and a level of immersion lacking in traditional roleplays. A significant number of visitors were clinicians. Future research might attempt to better understand their experience of simulated auditory hallucinations, and its subsequent effect on their clinical practice. Such a training tool could be similar to virtual and augmented reality simulations in medical training (Barsom, Graafland, & Schijven, 2016).

Reflexivity

The exhibition combined academic and experiential perspectives but form and content was always guided by people with lived experience. Academic perspectives could appear less applicable by comparison with the authenticity of experiential Voice Collective testimony; but academic knowledge intertwined in significant ways: academic and clinician visitors suggested ways their voice hearing experience would influence their practice; and visitors' experiences were supplemented with information from academic research throughout the post-exhibition discussion groups.

The multiplicity of perspectives in the production team enhanced the authenticity and nuance of the exhibition; and yet, aims to integrate academic and experiential perspectives highlighted important differences. In particular, the team reflected upon how academics, service users, and nonclinical voice hearers can use very different labels for such unusual experiences, which raises questions about how societies construct culturally-relative ideas about so-called

³ www.awalkthroughdementia.org

‘psychotic experiences’ (Boyle, 2014). These reflections and questions about labelling were not outcomes of the analysis but rather some of the fundamental motivations of the project itself.

Production team members continually drew on knowledge gained through the creative process to add layers that enhanced content. Workshops were an opportunity for artists to discuss their own personal encounters with voice hearing. Production team members reported that this provided a significant ‘therapeutic’ effect that helped to address such an emotive topic and led to a reflective atmosphere of open creativity. The involvement of actors and their understanding of performance and experience of mental health difficulties similarly strengthened the exhibition. Actors were profoundly affected by performing voices. This effect, coupled with actors’ position of influence over visitors, might be said to provide an interesting counterpart to Avatar Therapy, in which voice hearing service users are supported to gain control over their voices (Leff, Williams, Huckvale, Arbuthnot, & Leff, 2013).

Production team diversity provided an interesting parallel to the voice hearing experience itself; and illuminated visitor comments about a disorientated, detached sense of personal identity, and their unresolved questions about locating voices inside or outside the self. Studies show that people with auditory hallucinations experience voices as dissociated or disowned components of the self (Longden, Madill, & Waterman, 2012), with an internal ‘battle for control’ and dilemma of independence (Mawson, Berry, Murray, & Hayward, 2011). Such disintegrated experience might explain why visitor distraction and emergent awareness of themselves as the audience of a unique internal performance felt so unnerving; why actors were profoundly affected and reported a close, personal concern for audience wellbeing compared with conventional theatre, despite feeling a dislocated sense of stage presence themselves; but, conversely, why the production team felt a therapeutic effect through integrating perspectives to

achieve their desired aims. Studies show that a coherent narrative of self is closely associated with psychological wellbeing (Bauer, McAdams, & Pals, 2008), including for people with psychosis (Schrack et al., 2014). These questions about narrative and personal identity occurred for all involved, and might be said to demonstrate a further way in which the simulation enhances our understanding of voice hearing.

Conclusions

This project combined creative, academic and experiential perspectives and aimed to produce an immersive art installation that increased public understanding of psychotic experiences. The exhibition was implemented as intended, gained positive visitor feedback, felt immersive, and enhanced subjective understanding. A production team meeting identified exhibition strengths, challenges, and potential modifications. The exhibition has various future applications, including public engagement and simulation training.

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Table 1. Demographic characteristics of visitors who completed the evaluation

Demographic	Frequency* <i>N (%)</i>
Age (years)	
≤18	1 (.7)
19-25	34 (22.8)
26-35	77 (51.7)
36-45	17(11.4)
46-55	7 (4.7)
56-64	9 (6.0)
≥65	4 (2.7)
Gender	
Male	41 (27.7)
Female	107 (72.3)
Ethnicity	
Asian/Asian British	5 (3.4)
Black/Black British	2 (1.3)
White British	94 (63.1)
White other	38 (25.5)
Mixed/Multiple ethnic groups	8 (5.4)
Other	2 (1.3)
Occupation	
Student	24 (16.2)
Employed	119 (80.41)
Retired	5 (3.38)

*2% missing data.

Table 2. Post-exhibition discussion group themes and associated questions

Main themes	Subthemes	Associated questions
Subjective understanding of voice hearing	<ul style="list-style-type: none"> ▪ Normalised voice hearing: “does not seem so unusual” ▪ “Made me think about how society reacts” ▪ Raised questions about identity ▪ Effect occurred very rapidly ▪ Thought about the experience of genuine voice hearing ▪ Thought about how hard it must be to cope ▪ Questioned ‘normal experience’ ▪ “Gave me ideas not previously considered” ▪ Debrief made voice hearing more meaningful ▪ Improved empathy and insight ▪ Positive experience/rewarding ▪ “Made me think about frequency of voices” 	<ul style="list-style-type: none"> ▪ How prevalent is voice hearing in the general population? ▪ How do you respond to voices? ▪ Are there typical voices or are they different? ▪ Do people always hear same voice? ▪ Do I hear voices? ▪ How do voices emerge? ▪ Is the voice normally of your own age or gender? ▪ Is the voice a ‘character’? ▪ Would a voice be someone other than your own thoughts? ▪ How frequent is voice hearing? ▪ What is it like to experience voices daily? ▪ Does voice hearing vary over time? ▪ Do people experience voices as part of them or as something external? ▪ Is this what voice hearing is like?
Immersion of simulation	<ul style="list-style-type: none"> ▪ Experience felt convincing/effective ▪ Voices very compelling ▪ Replicated voices very well ▪ Felt very realistic, powerful, personal ▪ Allowed me to ‘feel’ experience ▪ Better understanding of what voice hearing is like 	<ul style="list-style-type: none"> ▪ How was the simulation achieved? ▪ What was the motivation for simulating voices?
Cognitive responses	<ul style="list-style-type: none"> ▪ Distraction ▪ Confusion ▪ Self-awareness ▪ Thought-provoking; made me question things ▪ Considering whether to obey or defy voice 	<ul style="list-style-type: none"> ▪ How do voices reflect your own thoughts? ▪ Should I obey or defy the voice? ▪ How do you cope with/get used to voice hearing/distraction?
Emotional responses	<ul style="list-style-type: none"> ▪ Intense ▪ Frustrating, irritating ▪ Anxiety-provoking ▪ Disorientating; detachment, felt outside of self ▪ Overwhelming ▪ Voices felt like part of self ▪ Did not identify with voice ▪ Uncomfortable ▪ Voices were soothing, comforting 	<ul style="list-style-type: none"> ▪ What does voice hearing really feel like?
Behavioural responses	<ul style="list-style-type: none"> ▪ Modified according to voice commands ▪ Made me not talk to people ▪ Made me stand near others ▪ Tried to defy the voice ▪ Sensory overload 	<ul style="list-style-type: none"> ▪ How should I respond to voices’ commands?
Expectations of voice hearing	<ul style="list-style-type: none"> ▪ More about mental distress ▪ Could have been ‘more crazy’ 	<ul style="list-style-type: none"> ▪ What is it really like to hear voices? ▪ Were voices meant to be distressing?

Responses to the exhibition/simulation	<ul style="list-style-type: none"> ▪ Not cruel enough ▪ Not distressing enough ▪ Wanted to be more uncomfortable ▪ Wanted greater fear ▪ Surprised not more distressing 	<ul style="list-style-type: none"> ▪ Was it intentional to not make voices too intense? ▪ Is voice hearing normally more intense? ▪ Why did I have a 'bored teenager' voice?
	<ul style="list-style-type: none"> ▪ Enjoyed the art; art was very powerful ▪ Train felt intense, felt like platform was moving ▪ Wanted exhibition to be longer ▪ Wanted longer/less time in first room ▪ Wanted to hear from artists ▪ Wanted more voices; different voice types ▪ Would like to talk to voice ▪ Voices were quiet on train 	<ul style="list-style-type: none"> ▪ What were the goals of the exhibition? ▪ Why did you choose this art? ▪ Did we each have a unique voice? ▪ Could the exhibition be expanded? ▪ Were we being watched?
Applications of simulation	<ul style="list-style-type: none"> ▪ Will open future conversations ▪ Good training tool; useful experience for trainees/clinicians ▪ Useful in schools ▪ Helpful for families 	<ul style="list-style-type: none"> ▪ How can I hear about more research related to voice hearing?

*Items in bold were mentioned multiple times

Table 3. Strengths, challenges, and suggested modifications identified at post-exhibition production team meeting

Components	Strengths	Challenges	Suggested modifications
Planning	<p><i>Aims</i></p> <ul style="list-style-type: none"> Large scale project; ambitious; novel, unique; aiming for large number of visitors Well researched, good preparation Intended exhibition was achieved 	<ul style="list-style-type: none"> Insufficient preparatory time immediately before opening of exhibition 	<ul style="list-style-type: none"> Additional time for final preparations Include pilot/rehearsal stage
	<p><i>Preparatory workshops</i></p> <ul style="list-style-type: none"> Workshops were open/exploratory Voice characterisations were well developed 	<ul style="list-style-type: none"> Insufficient time to work on all aspects of voice hearing 	<ul style="list-style-type: none"> New structure with additional sessions
Voice performance	<p><i>Rehearsal</i></p> <ul style="list-style-type: none"> Preparatory resources for actors were helpful Recording session enabled actors to gain insight into performance 	<ul style="list-style-type: none"> Actors did not have direct involvement in workshops with voice hearers; received workshop information second-hand 	<ul style="list-style-type: none"> Actors to attend workshops with voice hearers Actors to be paired with individual voice hearers during the workshops to improve development of voice characterisations
	<p><i>Performance</i></p> <ul style="list-style-type: none"> Actors benefitted from experiencing gallery space in order to understand visitor experience Live direction in sound booth was helpful Performing with acting partners was educational/supportive 	<ul style="list-style-type: none"> Maintaining character/sustaining improvised vocal content Insufficient time to prepare/enter sound booths 	<ul style="list-style-type: none"> Increased rehearsal time to practice improvisations/become more comfortable with voice characterisations; more time to experience gallery, adapt/refine through rehearsals Develop prompts (scripts) for generating vocalisations Rota for alternating acting partners Actors involved in post-exhibition discussion groups during pilot stage
	<p><i>Post-performance</i></p> <ul style="list-style-type: none"> Actors reported their role had generated interest from others 	<ul style="list-style-type: none"> Voice characterisation remained in actors' thoughts after performance 	<ul style="list-style-type: none"> Greater awareness of support for actors Actors to have structured debrief/de-role sessions after shift/full debrief at end of exhibition
Technology	<p><i>Creating a simulation</i></p> <ul style="list-style-type: none"> Technical operations/translation 	<ul style="list-style-type: none"> Difficult to access some necessary 	<ul style="list-style-type: none"> More time for researching and sourcing equipment

	from people with voice hearing experiences to people with no experience was well executed	<ul style="list-style-type: none"> equipment Technical difficulties shortly before exhibition opened Resources not available to give visitors multiple voices Simulation focused on voice hearing; conveyed less about other unusual multisensory experiences 	<ul style="list-style-type: none"> Full tech rehearsal Investigate greater numbers of visitors in gallery at one time Actors to switch themselves in and out Voices to talk to other voices, and voices to respond to visitors' vocalisations by using microphones attached to the audio guide More simulated multisensory experiences, e.g. visual, smells More interactive components
	Identifying and monitoring visitors		
	<ul style="list-style-type: none"> Effective communication between front of house and actors; actors were generally able to identify visitors from description/colour-coded audio guide 	<ul style="list-style-type: none"> Visitors wearing similar clothes/similar appearances/changing appearance before entering exhibition, e.g. taking off hat; scarves obscured visibility of audio guides Small monitors/camera positioning meant actors could not always track visitors Voices saying something incongruent with events in gallery, e.g. saying something to a visitor that was evidently factually inaccurate, which reduced immersion 	<ul style="list-style-type: none"> Bigger monitors, improve camera positions, more cameras, wider angle cameras Camera in waiting room to enable actors to see visitors as they arrive Actors to have their own monitor More discussion between actors and front of house about helpful ways of describing physical appearances
Visitor experience	Emotional effect		
	<ul style="list-style-type: none"> Visitors mentioned improved effect on their insight, empathy, compassion, and understanding Visitors found the simulation immersive 	<ul style="list-style-type: none"> Some visitors expressed disappointment that voices were not as 'scary' as they expected/wanted. 	<ul style="list-style-type: none"> More information on diversity of voice hearing experiences in initial advertisements Email visitors information pack Develop website Visitors as potential ambassadors who can use the information they learned at the exhibition to have a conversation with someone else about voice hearing More information about voice hearing in waiting area; make waiting area a gallery room
	Post-exhibition discussion groups		

	<ul style="list-style-type: none"> Visitors reported finding discussion groups very useful; wanted to discuss experiences; raised interesting questions; were keen to learn Discussion groups helped visitors to reflect on expectations about voice hearing and destigmatised 	<ul style="list-style-type: none"> Half an hour sometimes felt insufficient 	<ul style="list-style-type: none"> Longer sessions
Organisation	<i>Attendance</i>		
	<ul style="list-style-type: none"> Tickets sold out; non-attendees were replaced at short notice 	<ul style="list-style-type: none"> No ticket fee meant some visitors appeared less committed by not attending or lateness 	<ul style="list-style-type: none"> Ticket fee Clearly state designated appointment time on tickets Investigate greater fluidity of visitors' entry to gallery
	<i>Data collection</i>		
	<ul style="list-style-type: none"> Data collected from most visitors Data effectively handled/filed 	<ul style="list-style-type: none"> Pen/paper data collection methods impractical especially for greater numbers of visitors 	<ul style="list-style-type: none"> Computerised/online data collection Collect data at ticket purchase Longer-term follow-up data: email visitors questionnaire one/two months post-exhibition; focus groups/interviews (telephone)

Figure Legends

Figure 1. Floor plan of the Copeland Gallery where the exhibition was held.

Figure 2. Visitors view artworks in the first room of the *Altered States of Consciousness* art exhibition.